

# ABSTRACT

An object of the invention is to provide a SAW device where a device size is made smaller than that of a conventional structure, has a high Q value, and is excellent in a frequency temperature characteristic in a SAW device using a quartz substrate. Therefore, IDTs 2 including pluralities of electrode fingers mutually inserted and grating reflectors 3a and 3b positioned on both sides of the IDTs 2 are disposed on a piezoelectric substrate 1. The piezoelectric substrate 1 is a quartz flat plate where a cut angle  $\theta$  of a rotation Y cut quartz substrate is set to satisfy a range of  $-64.0^\circ < \theta < -49.3^\circ$  in a counterclockwise direction from a crystal Z-axis and a propagation direction of a surface acoustic wave is set to  $90^\circ \pm 5^\circ$  to a crystal X-axis, and a surface acoustic wave to be excited is an SH wave. The IDTs 2 and the grating reflectors 3a and 3b are made from Al or alloy including Al as a main component, and when a wavelength of a surface acoustic wave is represented as  $\lambda$ , an electrode film thickness  $H/\lambda$  standardized by the wavelength is set to satisfy  $0.04 < H/\lambda < 0.12$ .